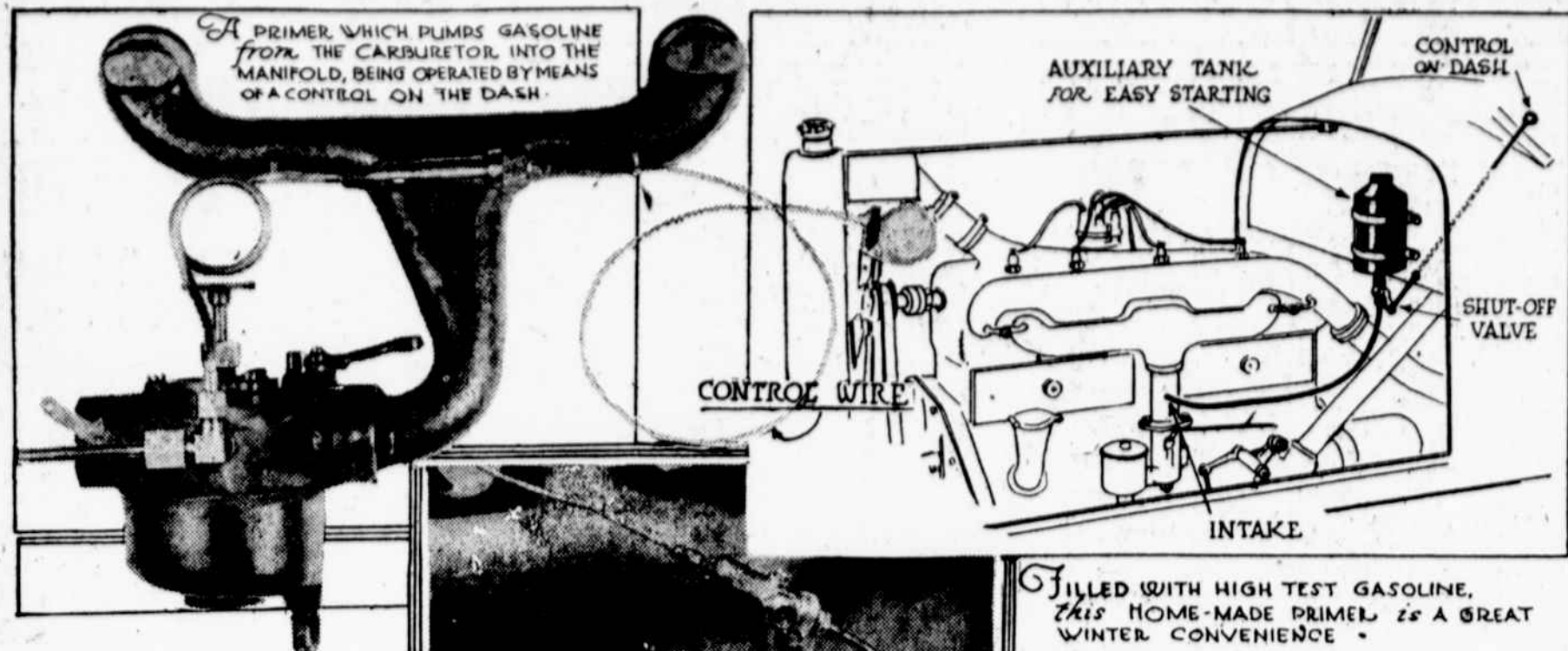


# How to Secure Easy Starting a Perennial Problem Many Methods Employed to Overcome Difficulty



Of Priming Devices There Is No End, and Some of Them Are Pretty Good.

By ALEXANDER JOHNSTON,  
Editor of MoTors.

FROM the dawn of the automobile industry to the present day there is one problem that has been a hardy perennial—the question of how to secure easy starting. Back in the old days we had superfluous gasoline, but the cars were so crude that it was difficult to get them started on cold days, even with the gaseous dynamite that was available. Now our cars are highly developed and efficient, but the fuel that is handed us is so poor, so lacking in the lighter inflammable constituents, that it is still just as hard to get under way on chilly days as it used to be twenty years ago.

Many methods of overcoming starting difficulties have been employed during the years of the motor vehicle's active career. One method of the older day was pouring boiling water into the cooling system to warm the engine. Hot bricks laid against the carburetor used to be popular, and one trusting soul that we once knew briefly used to encourage the frigid instrument by applying a lighted blow torch to its bowl. No, we do not recommend this latter treatment.

In spite of the variety of experiments the best method of inducing an easy start on a cold day or by a cold engine is the old reliable priming, preferably with some fuel lighter and more inflammable than ordinary gasoline. And of priming devices there are any number, ranging from the rate primers with electrically-heated coils on the side.

Perhaps the most effective priming outfit is the one consisting of a small air-tight tank holding about a quart of the priming fluid and usually located under the dash. From this tank a pipe leads to the inlet manifold and a second pipe to the pump or other control on the dash. By means of the control a small quantity of the priming fluid is injected into the inlet

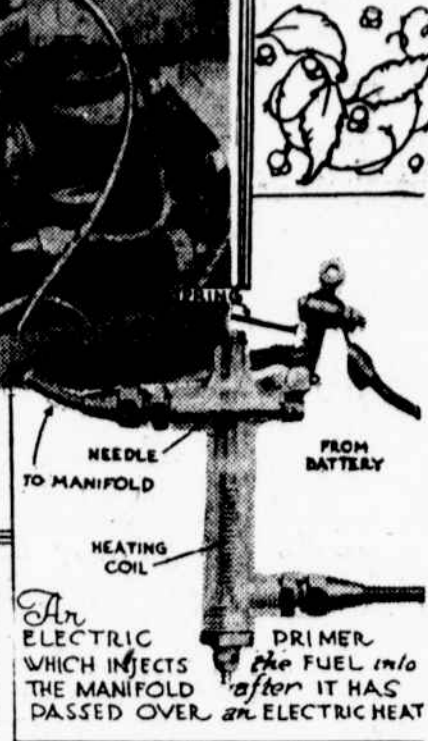
AN EASILY INSTALLED PRIMING OUTFIT BY MEANS OF WHICH A SMALL QUANTITY OF GASOLINE MIXED WITH AIR IS DRAWN INTO THE MANIFOLD.

manifold, whence it is sucked into the combustion chambers and is fired by the first spark. The various types of priming devices are shown in the illustrations accompanying these words, including one that can be made and installed at home by any ingenious motor car owner.

And that reminds us that in the old days when cars were generally fitted with acetylene tanks for lighting, it was possible to arrange a lead from this receptacle to the inlet manifold and prime with acetylene gas.

With regards to fluids for use in priming, a few words may be helpful. There is no better agent for this purpose than high test, what is usually known as 76 degree, gasoline, the kind of fuel that we used to get all the time. This grade of gasoline is so light and volatile that it will not condense, even in ice cold inlet passages, and as soon as it comes in contact with a spark it fires at once. This 76 degree gasoline may be obtained from most garages or from the drug store. Some of the oil companies put out a product known as petroleum ether, which is simply a lighter constituent of the crude oil, differing little from high test gasoline. When this can be obtained it makes an excellent priming fluid.

FILLED WITH HIGH TEST GASOLINE, THIS HOME-MADE PRIMER IS A GREAT WINTER CONVENIENCE.



Where no special fluid is available, it is always possible to prime with ordinary gasoline, pouring it into the pet cocks or priming cups. Even the present heavy grades of gasoline contain enough of the lighter elements to make it fairly certain that the cylinders will fire when the raw fuel is injected into them.

Practically all car-owners understand that gasoline is affected by heat. Heat assists the vaporization of the fluid and this is why we have no difficulty in starting during the summer months. It is obvious then that if we can bring our fuel in contact with heat, even in cold weather, its efficiency will be increased. This is the principle underlying the more elaborate types of priming outfits, which employ electric current to pre-heat the fuel. In general this class of priming pumps the fuel into the inlet manifold, first

passing it over a coil, which has been heated by electricity. In this way there is a double assurance that the engine will start on its first revolution, since it is getting a lighter and more inflammable fuel, which is also pre-heated. Owners with chronic starting trouble will find these electric primers a reasonably sure cure for all their ailments.

For cars equipped with an electrical priming outfit of the kind described above, it is obviously unnecessary that their electric systems be maintained at maximum efficiency. They make a little extra demand upon the battery, which must be kept fully charged to meet the calls upon it.

Further in winter when all fuel is heavy and sluggish, a hot spark is needed to get a sure fire and this can only be given by a battery that is full of "pep." Keep the battery fully charged and the cells filled to level with distilled water. This is not a very difficult task, as evaporation is not as rapid in cold weather as in hot. It will be well also to watch the spark plug gaps, to see that they are correct, which means about the width of a thin dime.

The question of altitude has considerable to do with starting difficulties. In the rarified atmosphere 5,000 feet above sea level, the motorist will have trouble in starting earlier in the year than will the car owner living at sea level. It is simply a question of applying the same remedies a little earlier and keeping them going a little later.

In conclusion we may observe that even after the start has been secured, it is well in cold weather to give the engine all the heat possible. The hood and radiator should be covered whenever the car is left standing, to conserve the heat. Attachments for supplying the carburetor itself should be heated. The simple fact is that for winter operation we must artificially produce as nearly as possible the conditions of summer for the automobile engine, which is one of the most sensitive to climatic changes and conditions in the whole field of machinery.

## GOOD GRAPHITE WITHOUT PEER AS LUBRICANT

Fine Quality Should Be Used With Proper Amount of Oil.

In days gone by it was quite the thing to hear the folks singing about there being a "little bit of bad in every good little girl," says R. H. Kasper, in Automobile Dealer and Repairer. But in the years that have intervened, there is yet to be heard a song about a "little bit of good in every bad little boy." The bad little boy seems to have been neglected; no doubt being accepted as incorrigible. What little good there is in him has been deemed as scarcely worthy of mention.

Good qualities, however, are generally sticking out all over the bad little boy, usually bring ample reward. It depends upon the treatment whether the bad boy remains a bad egg or becomes somewhat of a plaster saint. And so, with a little pat on the back and a hearty "good luck," the song about the "good in the bad little boy" is about to be sung.

Graphite Wrongly Treated. In the "lubrication family," there have always been some members who were viewed with suspicion. Some were too thin, some too heavy, while others burned out and "cracked" too easily. Such cases were simply taken as a matter of course, and were attributed to the fact that these members of the family had not been placed in their proper spheres. But the one member of the family who had never really been given a chance, who had always been regarded as not having any redeeming quality, was the "bad little boy" of the family—graphite.

True, in many cases, he had acted atrociously, but this was due to the fact that he had been wrongly treated. But, if used rightly, and allowed to associate and mingle with his more favored brethren, he has always proven himself the best of the lot.

Before singing the praises of the bad little boy, it is perhaps advisable to explain why any member of the lubrication family should be needed at all. Every surface, no matter how finely finished, is full of minute irregularities. The shaft which rides in a bearing, the piston which moves in a cylinder, and the gear which meshes with its mate, are all covered with these irregularities.

Two such surfaces, running in contact without lubrication, produce a grinding effect, similar, in a lesser degree, to that which is experienced when two files are rubbed together. Friction reigns supreme, until it is given a knock-out blow by one of the members of the lubrication family. A lubricant fills up these minute irregularities, and forms a more or less frictionless film between the bearing surfaces, preventing actual metallic contact.

The lubricant used depends upon the load to which the bearing surfaces are subjected; when too light or thin for the work performed, it squeezes out; when too heavy, it offers resistance to the free movement of the parts, in either case the danger of burning out or cracking, which makes the choice of the proper lubricant of the utmost importance.

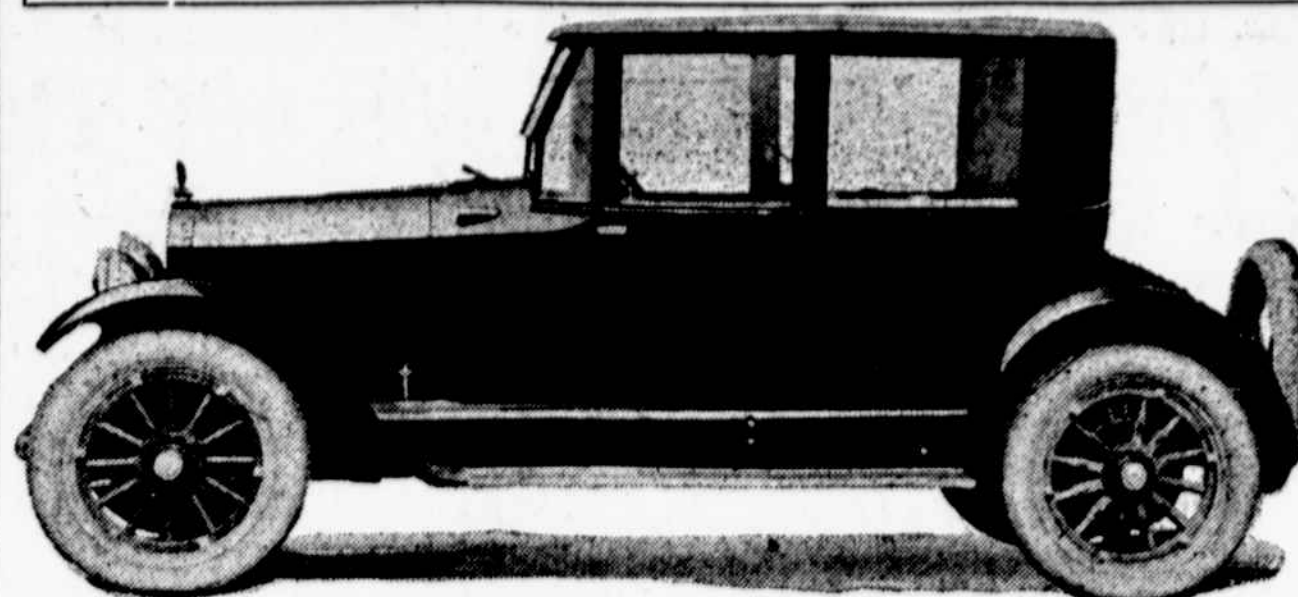
But there is one member of the lubrication family who does not care how heavy a burden is laid upon him, nor how hot it is made for him. And that member is the bad boy of the family—the black sheep, whose atrocious behavior seems never to be forgotten—graphite.

Graphite as a Lubricant. Graphite, as a lubricant for automobiles, has not received the attention and the favor which is due it. Opposition to its use has, no doubt, been due to the impurities contained in many grades on the market. Traces of abrasive material were to be found in many grades—a condition which justified the suspicion with which it was viewed. On the other hand, the difficulty of obtaining graphite so finely divided as to pass freely through the feed holes of the usual oilers aided in retarding its popularity as a lubricant.

When a pure and finely divided brand of graphite is used, its results can be attributed only to ignorance or carelessness in the manner of its application. Graphite should be fine enough to practically maintain suspension in oil or grease without undue settling. It should also be fine enough, when used with oil to flow freely in the oil film without clogging the bearing surfaces.

When graphite first came on the market as an automobile lubricant, ignorance as to its proper use was prevalent. Chauffeurs would purchase a large flake brand, and then

## NEW MODEL SHOWN BY RICE CO.



Stearns-Knight coupe brougham, an enclosed car that provides suitable roominess for four or five passengers. The side by side arrangement of the individual Pullman seats, and the convenience and comfort of the full width rear seat, back of which is extremely high, make the interior truly companionable.

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E. J. QUINN Westcott

generally mix about five times the required amount with the oil. There could be but one result—a clogging up of the lubricating system and a "gumming up" of the works in general. Graphite, willing and anxious to live up to expectations, had been called upon to give satisfaction under such adverse conditions, and, failing, was immediately labeled the black sheep of lubricants—a thing to be avoided.

Results of Research Work. The opposition to graphite as a lubricant led to a series of experiments, which, conducted in an impartial manner, indicated the following results:

1. The addition of graphite to oil causes a lower frictional resistance of journals than would be obtained with oil alone.
2. When graphite is used with oil, the amount of oil required for a given service is reduced. A lighter oil, and even one of inferior quality may be used.
3. The addition of too much graphite unduly thickens the oil and correspondingly increases the internal friction, due to viscosity.
4. The lubricating effect of graphite remains long after its application, but the supply should be constant, though small, in order to obtain the best results.

The carriers used in these experiments were the various oils, such as sperm, kerosene, lard, vaseline, etc. To make the experiments exhaustive, even water was used, and sustained a pressure of seventy pounds per square inch in the bearings, when about one-third of 1 per cent, by weight of graphite was added.

The above experiments left no doubt as to the efficiency of graphite as a lubricant, if used properly. It is practically indestructible, being unaffected by neither heat, cold, nor pressure. Its minute particles permeate the pores of the metal and build up a wonderful smooth surface layer, in which the carbon particles are intimately associated with the

metal. Such a surface is known as a "graphoid" surface, and anyone who has ever seen such a surface cannot but attest to the efficiency of its hard, smooth, mirror-like finish. It stands to reason that any bearing surface which has received a graphited finish will have wear and friction reduced to a minimum.

The ease with which such a surface can be attained is also a great factor in its favor. By adding 1/4 of 1 per cent, by weight, of graphite to the oil, it is possible to carry to all bearing surfaces a material which is finer than the minute pores of the metal, and which will gradually saturate the metal with a lubricant which heat cannot destroy.

**BUSINESS MEN LIKE CADILLAC ROADSTER**

The new roadster of Type 61 Cadillac, just put on the market, is receiving a great deal of attention from business and professional men.

It affords quick, sure transportation for those who wish to make trips about town, to suburban residences or the country club in a hurry. It has ample speed for all emergencies, and its rakish lines make a marked appeal to those who insist on smartness in their motor cars.

The rear deck is designed to make possible the use of a concealed rumble seat for two.

The cost of restoring a worn engine by having the cylinders re-ground, with new pistons, pins and rings is not as great as some owners think.

Properly repaired, your old engine will develop more power and use less gas and oil than when new.

Talk it over with your repair man

Washington Automotive Grinders' Association, Washington, D. C.

## The Elcar Taxi-Limousine

A cab built to produce and hold business. It is built by a company that has had half a century of experience in fine carriage, coach, and automobile building, and with facilities so large as to permit of the highest type of construction at the most reasonable cost. The ELCAR Taxi will attract attention anywhere, and is used for a purpose where attractiveness has a direct cash value.

The passengers' first impression will be confirmed by the cab's easy riding qualities, its luxurious upholstery and its fine appointments throughout.

No detail is lacking that will serve to develop and maintain the business of the best class of patrons.

The ELCAR Taxicab has 17-inch wheel base, which is several inches greater than the required standard, and the cab throughout fully meets every requirement of the municipal regulations of New York and other cities. These cabs are now in active service in Chicago, New York and elsewhere.

### Appointments Complete

The passenger compartment of the ELCAR Taxicab has ample space for five passengers, with rear seat for three and auxiliary seats for two.

Genuine Spanish brown leather is used for the upholstery of cushions, backs and facings of this compartment and for the padded arm rests of the rear seats. Top lining and remainder of compartment trimmed to match.

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## CLOSED CARS GAIN FAVOR OF PUBLIC

Coups and Sedans Now Regarded as All-Year Proposition, Says Jewett.

With the advent of cold weather, motorists throughout the country are being invited to give their attention to inclosed cars on display in numerous salons or shows or in special salesroom exhibitions. When the motor halls are shaken out of the overcoat the mind is in a receptive mood for sedans and coupes, and there is no doubt that interest in these models is now very keen.

"This is the natural time to open the closed-car season and the logical time for the motorist to examine the market to see what it offers in cars of this style," says Harry M. Jewett, president of the Paige-Detroit Motor Car Company. "Closed cars, however, have really ceased to be a seasonal proposition. They are now regarded as an all-year-round car and rightly so, for, with the advance made in body design and equipment, permitting the lowering and raising of windows with ease and dispatch, the sedan and coupe are found to be as desirable for summer as for winter. There is no question that the inclosed car is the modern automobile, offering the utmost in motoring comfort under all conditions.

### AUTO TIPS

Careful drivers save fuel.

Keep oil off the motor. It gathers grease.

Never "cut in" short after passing a vehicle.

In some future time, reckless walking will be considered just as serious as reckless driving.

Endurance, economy, comfort and price are the four most popular features of a passenger automobile.

"Road Hogs," in motor vehicles and "Jay Walkers" on highways are the two worst enemies of automobilism.

Many fatal accidents have occurred to operators who thoughtlessly step on the accelerator instead of on the brake.

When using a hammer on any part of a car always keep a block of wood between it and the metal part to be hammered.

At a speed of 20 miles an hour a car should be able to stop within 33 feet. At 40 miles an hour, a distance of 148 feet is required.

## World Registration of Motor-Driven Vehicles

Country	Population	Regis- tration	Persons Per Car
Alaska	64,356	400	150
Arabia	3,000,000	150	20,000
Argentina	5,600,000	9,000	622
Australia	5,000,000	78,000	64
Austria	6,500,000	19,300	337
Azores and Madeira Isl's	242,611	80	3,033
Barbados	192,000	700	274
Belgium	7,500,000	13,000	576
Bolivia	3,000,000	600	5,000
Brazil	22,000,000	14,700	1,497
British East Africa	2,800,000	900	3,111
British Guiana	311,000	800	389
British Honduras	42,000	60	700
British South Africa	5,973,000	29,000	206
British West Africa	23,108,000	2,000	11,654
Bulgaria	4,500,000	3,200	1,406
Canada	8,370,000	403,111	21
Ceylon	4,700,000	3,500	1,348
Chile	4,000,000	8,800	455
China	400,000,000	6,000	66,667
Chosen (Korea)	17,500,000	80	218,750
Colombia	5,475,000	1,200	4,563
Costa Rica	441,000	400	1,103
Cuba	3,000,000	31,800	94
Curacao	30,000	150	200
Denmark	3,000,000	780	385
Dominican Republic	700,000	1,600	438
Dutch East Indies	48,000,000	15,500	3,097
Dutch Guiana	91,622	120	764
Ecuador	1,300,000	450	2,889
Egypt	12,800,000	5,000	2,560
Fed. Malay States	1,036,999	4,000	259
Finland	3,330,000	2,000	1,665
French Indo-China	16,990,229	2,000	8,495
France	41,500,000	202,500	206
French Guiana	49,000	100	490
Germany	55,000,000	75,000	733
Gt. Britain and Ireland	46,080,000	420,000	110
Gibraltar	16,000	90	178
Greece	5,000,000	2,000	2,500
Guadeloupe	212,000	80	707
Guatemala	2,000,000	350	5,714
Haiti	2,000,000	400	5,000
Hawaii	255,912	1,210	212
Country	Population	Regis- tration	Persons Per Car
Honduras	353,446	125	4,428
Hongkong	440,000	550	800
Iceland and Faroe Isl's	86,500	130	665
India	315,156,000	25,550	12,333
Italy	40,000,000	35,550	1,125
Jamaica	891,000	2,130	418
Japan	58,000,000	11,750	4,936
Jugoslavia	14,500,000	2,000	7,250
Liberia	2,000,000	8	250,000
Madeira Islands	200,000	70	2,857
Malta, Gozo and Cyprus	224,000	140	1,600
Madagascar	3,512,690	180	19,515
Martinique	193,087	500	386
Mexico	16,000,000	18,000	889
Morocco	4,500,000	1,000	4,500
Netherlands	6,600,000	20,000	330
Newfoundland	259,000	500	518
Norway	2,700,000	12,100	223
Nicaragua	600,000	200	3,000
New Zealand	1,226,000	80,000	41
Panama	401,428	1,500	268
Paraguay	1,000,000	350	2,857
Peru	3,530,000	3,200	1,103
Philippine Islands	9,000,000	15,709	573
Porto Rico	1,295,826	5,500	236
Portugal	6,000,000	8,000	750
Persia	3,120,000	220	14,181
Rumania	10,000,000	200	50,000
Russia in Europe	142,000,000	30,000	4,733
Russia in Asia	25,000,000	3,200	7,813
Salvador	1,300,000	100	13,000
Siam	8,150,000	1,300	6,269
Spain	20,500,000	17,650	1,161
Straits Settlements	846,000	4,500	188
Sweden	5,814,000	12,000	485
Switzerland	4,000,000	26,500	151
Trinidad and Tobago	352,000	1,200	293
Tripoli	1,000,000	700	1,429
Tunis	1,800,000	1,000	1,800
Turkey	8,000,000	620	12,903
U. S. of America	106,683,108	9,211,295	11
Uruguay	1,400,000	11,000	127
Venezuela	2,848,000	2,800	1,017
Virgin Islands	26,051	250	104

—From Automotive Exporter.

### J. B. HOLLOHAN TAKES GENERAL TIRE HERE

J. B. Hollohan, recently appointed distributor for General Tires for the District of Columbia, has opened a sales room and office at 1411 Fourteenth street northwest.

Mr. Hollohan, formerly a member of the Washington Motor Sales Company's sales organization, has had extensive experience in the marketing of automotive products and should meet with success with the General Tire distributorship.

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